CLAIMS

1. A method for generating cold and heat by magnetic effect, ~~characterized~~ in ~~that~~ a mixture of transmitting fluid is circulated containing particles consisting of at least a magneto-calorific material, a phase-change material, a superconductive material, or a mixture of such materials through a principal circuit (13) consisting of a first heat exchanger (11) and a second heat exchanger (12) connected in series, in that a magnetic field is generated in said first heat exchanger (11) using magnetic elements (14) associated with said first heat exchanger (11), in that the second heat exchanger (12) is kept outside said magnetic field in order for said particles to undergo a temperature increase when they pass through the magnetic field and undergo cooling when they leave the magnetic field, in that heat is extracted from said first heat exchanger (11) by means of a hot circuit (15) and in that cold is extracted from said second heat exchanger (12) using a cold circuit (16).
2. A method according to claim 1characterized in that said transmitting fluid is in the liquid or gas state.
3. A method according to claim 1 characterized in that said transmitting fluid is a heat-transmitting liquid.
4. A method according to claim 1 characterized in that said transmitting fluid is a nano-fluid.

5. A method according to claim 1 characterized in that said transmitting fluid is a suspension.
6. A method according to claim 1 characterized in that said transmitting fluid is a multi-functional type of fluid.
7. A method according to claim 1 characterized in that said particles of magneto-calorific material consist of one single material.
8. A method according to claim 1characterized in that said particles are generally spherical in shape and their average dimension ranges from 10 μm to 1000 μm.
9. A method according to claim 1 characterized in that said particles are of different shapes and dimensions.
10. A method according to claim 1 characterized in that the second heat exchanger (12) is insulated from the magnetic field generated in the first heat exchanger (11).
11. A method according to claim 1 characterized in that the mixture from the principal circuit (13) and the mixture from the hot circuit (15) and/or the cold circuit (16) circulate in opposite directions, respectively, through said first and said second heat exchanger (11, 12, respectively).
12. A method of generating cold and heat by magneto-calorific effect characterized by circulating a mixture of heat-transmitting fluid and particles consisting of at least a superconductive material in a principal circuit (13) consisting of a first heat exchanger (11) connected to a second heat exchanger (12), in that a magnetic field is generated in said first heat exchanger (11) by magnetic elements (14) associated

with said first heat exchanger (11), in that said mixture circulates in the second heat exchanger (12) located outside the magnetic field so that the particles of superconductive material undergo a rise in temperature when they pass through the magnetic field to heat said mixture in said first heat exchanger (11), and in that they undergo cooling when leaving the magnetic field to cool said mixture in said second heat exchanger (12), in that heat is extracted from said first heat exchanger (11) using at least one hot circuit (15) and in that cold is extracted from said second heat exchanger (12) using at least one cold circuit (16).

13. A device for generating cold and heat by magnetic effect comprising at least one heat exchanger characterized in that it comprises:

- a principal circuit (13) consisting of a first heat exchanger (11) and a second heat exchanger (12) connected in series through which there circulates a mixture of transmitting fluid containing particles consisting of at least a magneto-calorific material, a phase-change material, a superconductive material, or a mixture of such materials.
- magnetic elements (14) for generating a magnetic field in said first heat exchanger (11) so that the particles undergo a rise in temperature when passing through the magnetic field and undergo cooling upon leaving the magnetic field;
- a cold circuit (15) connected to said first heat exchanger (11); and
- at least one cold circuit (16) connected to said second heat exchanger (12).

14. A device according to claim 13 characterized in that said magnetic elements (14) comprise permanent magnets.

15. A device according to claim 13 characterized in that said magnetic elements (14) comprise electromagnets.

16. A device according to claim 13 characterized in that said magnetic elements (14) are designed to generate a variable magnetic field.

17. A device according to claim 13 characterized in that said first heat exchanger (11) comprises an exterior envelope (11a) and interior conduits (11b), said the interior conduits serving as vehicles for a heat-transmitting fluid (15a) from the hot circuit (15) and submerged in the mixture of transmitting fluid and particles (13a) from the principal circuit (13), and in that said magnetic elements (14) constitute the exterior envelope (11a) of the heat exchanger (11).

18. A device according to claim 13 characterized in that said first heat exchanger (11) comprises an exterior envelope (11a) and interior conduits (11b), said interior conduits (11b) serving as vehicles for a heat-transmitting fluid (15a) from the hot circuit (15) and submerged in the mixture of transmitting fluid and particles (13a) from the principal circuit (13), and in that said magnetic elements (14) constitute a portion of the exterior envelope (11a) of the heat exchanger, the other portion consisting of a tube (11c) concentric to said magnetic elements (14).

19. A device according to claim 13 characterized in that said first heat exchanger (11) comprises an exterior envelope (11a) and interior conduits (11b), said interior conduits (11b) serving as vehicles for a heat-transmitting fluid (13a) from the principal circuit (13) and submerged in a transmitting fluid (15a) from the hot circuit (15), and in that the magnetic elements (14) constitute the walls of said interior conduits (11b).

20. A device according to claim 13 characterized in that said first heat exchanger (11) comprises an exterior envelope (11a) and interior conduits (11b), said interior conduits (11b) serving as vehicles for a heat-transmitting fluid (13a) from the principal circuit (13) and submerged in a transmitting fluid (15a) from the hot circuit (15), and in that the magnetic elements (14) constitute a portion of the walls of the interior conduits (11b) of the heat exchanger (11), the other portion consisting of tubes (11d) concentric to the magnetic elements (14) and located inside said elements.